19B. Tech Program First Year

Course: Experiential Learning

Course Code: AI2170

## Library management System with focus on “Search”

by

**Akash Kumar Singh**

**219310279**

B.Tech. 2nd Year, Section – ‘3B’

Under the guidance

of

**Ms. Shikha Mundra**

**Assistant Professor (Sr. Scale)**

Department of Computer Science & Engineering,

School of Computer Science and Engineering,

Manipal University Jaipur,

Jaipur

***Department of Computer Science & Engineering,***

***School of Computer Science and Engineering,***

***Faculty of Engineering***

***Manipal University Jaipur, India***

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# Certificate

This is to certify that this project is a record of the bona fide work done by **Akash Kumar Singh** (Reg No:219310279) submitted for the partial fulfilment of the requirements for the completion of the Project Based Learning (AI2170) course in the **Department of Artificial Intelligence & Machine Learning** of **Manipal University Jaipur,** during the academic session August - December 2022.

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| --- |
| *Signature of the mentor* |
| Shikha Mundra,  Assistant Professor, (Senior)  Department of CSE, SCSE |

# Abstract

# The main focus of this project is towards learning about natural language processing. I have implemented it at the search part of the library database. Users/ College Students trying to search for a particular book often don’t remember the exact name. Some spelling error may be present during searching. This project tries to facilitate users to search for a book by writing some important keywords related to the book or author name or even some spelling mistake and tries to give relevant results.

# This project has also implemented the concept of database management using sql server. The database is hosted on phpMyAdmin which helps us to fetch data anytime, anywhere online.

# Introduction

**Purpose:** The objective of the portal is to make it easier for the students to search for books in the library especially college students as their books have all kinds of names. It also tries to automate the process of borrowing books from the library.

Overall, this portal will help the students and faculty better manage the books in the library and also help students in searching for books.

**Scope:** Without this Portal search for any kind of book will become a tedious job for any Student as they’ll have to know the exact name of the book.

**Login module:** Login module will help in authentication of user accounts. Users who have valid login id and password can only login into their respective accounts.

**Registration Module and Account Management:** This module will help the student get registered from anywhere if internet is present. This module will really simplify the task of on paper registration. Also, after successful registration the user can update information and change their password and the registration also requires validation of email address via an otp.

**User Management:** This module will help the database administrator in enabling/disabling a user account and updating user information as required.

**Search Portal:** This module is for the staff and students to search for books present in the library.

**Enhanced Entity Relationship Diagram:**

**Diagram

Description automatically generated**

**Print View – Data dictionary:**

**AUTHORS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| isbn13 | int(11) | No |  |  |
| authors | varchar(100) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| fk\_authors\_books | BTREE | No | No | isbn13 | 0 | A | No |  |

**AVAILABILITY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| isbn13 | int(11) | No |  |  |
| status | int(1) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| fk\_availability\_books | BTREE | No | No | isbn13 | 0 | A | No |  |

**BOOKS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| bookID | int(11) | Yes | *NULL* |  |
| title | varchar(500) | Yes | *NULL* |  |
| isbn13 *(Primary)* | int(11) | No | 0 |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | isbn13 | 0 | A | No |  |

**FINE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| fine\_id *(Primary)* | int(11) | No |  |  |
| user\_name | varchar(300) | No |  |  |
| fine\_amt | int(11) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | fine\_id | 0 | A | No |  |
| fk\_fine\_users | BTREE | No | No | user\_name | 0 | A | No |  |

**PUBLISH**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| isbn13 | int(11) | No |  |  |
| publication\_date | date | Yes | *NULL* |  |
| publisher | varchar(20) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| fk\_publish\_books | BTREE | No | No | isbn13 | 0 | A | No |  |

**RATING**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| isbn13 | int(11) | No |  |  |
| rating | decimal(3,2) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| fk\_rating\_books | BTREE | No | No | isbn13 | 0 | A | No |  |

**RESERVATION**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| res\_id *(Primary)* | int(11) | No |  |  |
| user\_name | varchar(300) | No |  |  |
| res\_date | date | Yes | *NULL* |  |
| copies | int(11) | Yes | *NULL* |  |
| isbn13 | int(11) | No |  |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | res\_id | 0 | A | No |  |
| fk\_reservation\_users | BTREE | No | No | user\_name | 0 | A | No |  |
| fk\_reservation\_books | BTREE | No | No | isbn13 | 0 | A | No |  |

**RETURNING**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| return\_id *(Primary)* | int(11) | No |  |  |
| user\_name | varchar(300) | No |  |  |
| return\_date | date | Yes | *NULL* |  |
| copies | int(11) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | return\_id | 0 | A | No |  |
| fk\_returning\_users | BTREE | No | No | user\_name | 0 | A | No |  |

**USERS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column** | **Type** | **Null** | **Default** | **Comments** |
| user\_name *(Primary)* | varchar(300) | No |  |  |
| email | varchar(300) | Yes | *NULL* |  |
| PASSWORD | varchar(300) | Yes | *NULL* |  |

**Indexes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | user\_name | 0 | A | No |  |

# System requirements

1. Operating system: Linux- Ubuntu 16.04 or higher, or Windows 7 or higher
2. RAM: 2GB (4GB Preferable)
3. Python 3.6 or higher installed on the pc.

**Facilities required for proposed work:**

1. MySQL Server
2. PHPMyAdmin
3. Python3
4. Tkinter Library for GUI
5. Python Libraries:

* Fasttext
* Word2vec
* Pandas
* Pillow
* Pymysql
* Os
* Smtplib
* Ssl
* Email.message
* Random
* Pickle
* Time

# Results and Discussions

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# Conclusions

Through this project I have learn a lot about nlp and its applications. I have also learnt about different libraries of python. Also, I learnt about database management and how to properly manage a database while making the database for the desktop application.

# Future prospects:

* Make website and android apps
* Manage the whole library
* Next Word Suggestion during Searching
* Wrong Spelling’s effect on Next Word Suggestion
* Adding the Self trained Results

# References

1. towardsdatascience.com
2. radimrehurek.com
3. Some references from Ms. Shikha Mundra’s unpublished Research Paper
4. fasttext.cc
5. Stackoverflow
6. Google
7. Youtube
8. W3School
9. Geeks for geeks

# Acknowledgement

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